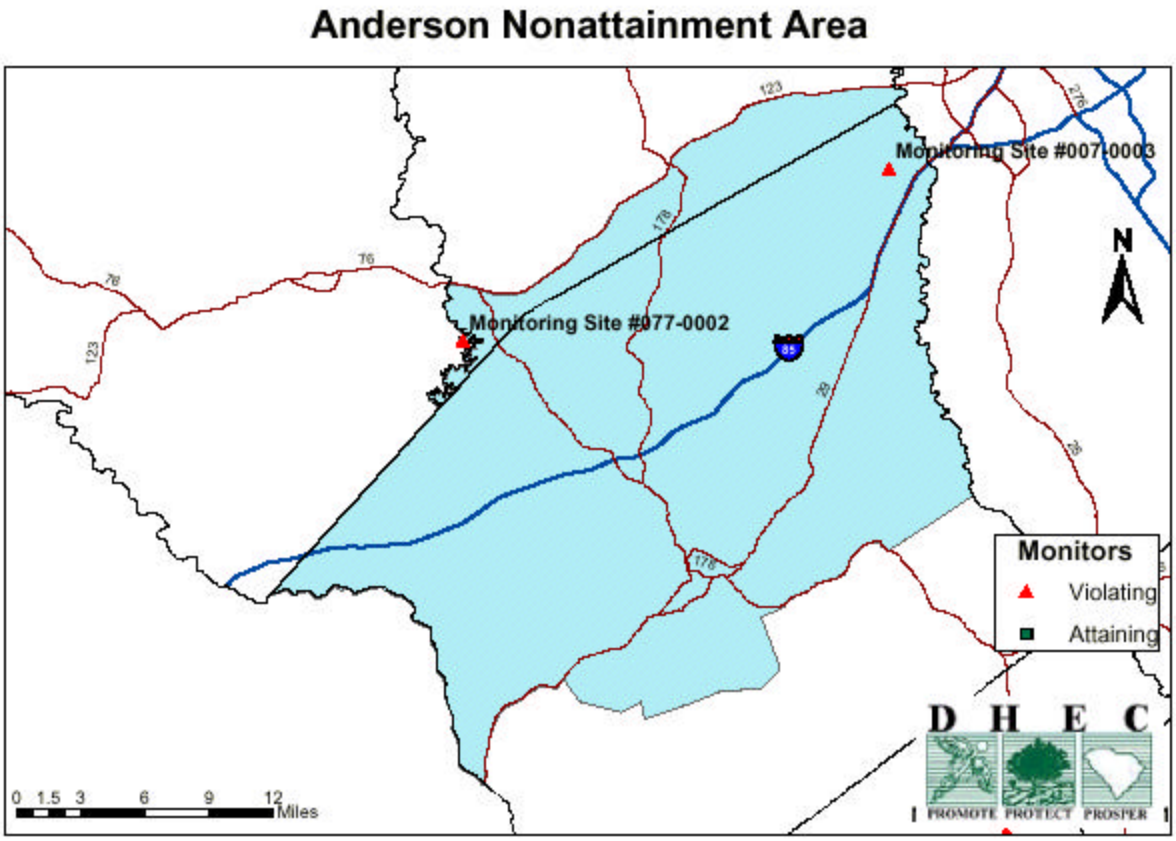


Figure 1: Anderson Nonattainment Area Map

The South Carolina Department of Health and Environmental Control (Department) recommends that the area encompassed by the boundaries of the Anderson Metropolitan Planning Organization (MPO) and the contiguous area encompassing the monitor site at Powdersville in Anderson County and a portion of Pickens County that encompasses the Clemson monitoring site be designated a nonattainment area for violating the 8-hour ozone National Ambient Air Quality Standards (air quality standard) based on 2000 through 2002 monitoring data. This recommended area will be referred to as the Anderson Nonattainment Area throughout the rest of this document.

The recommended boundary for the Anderson Nonattainment Area captures the most urbanized portions of Anderson County and a good portion of the urbanized area of Pickens County, as the boundary captures a major state road that connects urban clusters in Pickens County with those in Greenville County. The Anderson Nonattainment Area captures 97% of the NO_x point sources in the two counties and 90% of the VOC point sources. This boundary captures the second largest NO_x point source in the six (6) county Upstate (Oconee, Pickens, Anderson, Greenville, Spartanburg and Cherokee) of South Carolina. This facility is subject to the NO_x SIP Call and has a 2004 ozone season NO_x budget of 705 tons. The proposed boundary captures 66% of the 2001 daily vehicle miles traveled and in 2025 it is estimated that this will be 67%. There is one monitor in Anderson County and one monitor in Pickens County. Both of these monitors are captured within the recommended boundary and both indicate nonattainment with the 8-hour ozone standard.

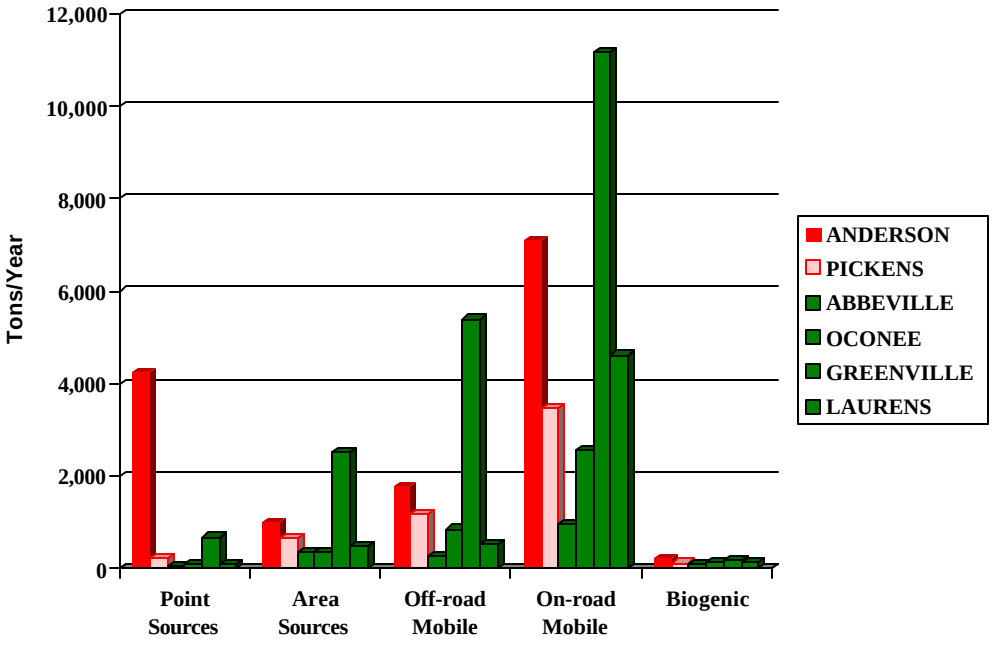
The Department is submitting this document to provide detailed information pertaining to the factors

which EPA suggested be addressed in support of any nonattainment area designation recommendations.

A. Emissions and Air Quality in Adjacent Areas (Including Adjacent MSAs)

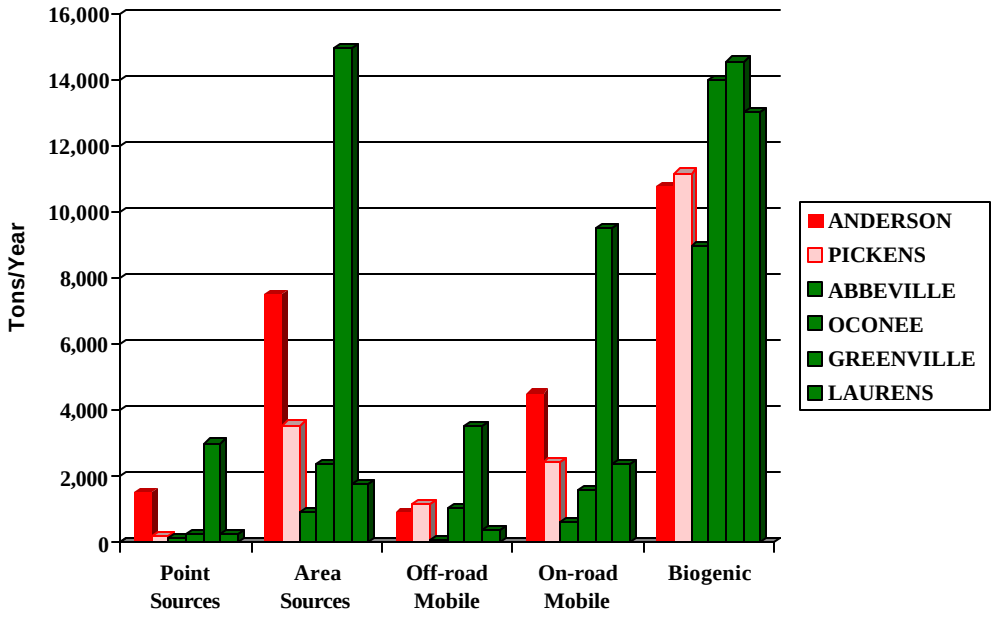
To evaluate the emissions in Anderson and Pickens Counties and the adjacent areas, South Carolina utilized the estimated annual 1999 oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emissions. The types of NO_x and VOC emission sources that were evaluated include point, area, biogenic, and on-road and off-road mobile sources.

Figure A-1: NOx Sources for Anderson, Pickens and Adjacent Counties*



*** Order of bars corresponds with order of counties in legend.**

Figure A-2: VOC Sources for Anderson, Pickens and Adjacent Counties*



*** Order of bars corresponds with order of counties in legend.**

Figures A-1 and A-2 show the percentage of emissions from each source category for Anderson, Pickens and surrounding South Carolina Counties. Additional emissions inventory information is provided in Section D.

The Department has two ozone-monitoring sites in the Anderson Nonattainment Area with three years of data; both monitors indicate a violation of the air quality standard. Anderson and Pickens Counties are both part of the Greenville – Spartanburg - Anderson MSA. Air quality information is provided in Section C.

B. Population Density and Degree of Urbanization Including Commercial Development (Significant Difference from Surrounding Areas)

According to the US Census, urban is defined as all territory, population, and housing units in urbanized areas and urban clusters. An urbanized area is defined as a densely settled area that has a census population of at least 50,000, and an urban cluster is defined as a densely settled area that has a census population of 2,500 to 49,999. An urban area is a generic term that refers to both urbanized areas and urban clusters. Rural is defined as all territory, population, and housing units located outside of urbanized areas and urban clusters.

Anderson County is 718 square miles and had a population of 165,740 in 2000. The current population density is 230.8 persons per square mile. The county is more urban than rural, as 58.3 percent of the county's population, or 96,680 people, live inside of either urbanized areas or urban clusters.

Based on data provided by the SCDOT, the population of the towns in the boundary, and an

assumption about the rural population in the boundary, the population of the recommended area is estimated to be 98,475. Using similar assumptions, the land area of the recommended area is approximately 290.2 square miles. The population density of the Anderson County portion of the recommended area is calculated to be 339.3 persons per square mile.

Pickens County is 497 square miles and had a population of 110,757 in 2000. The population density is 222.9 persons per square mile. Although the county's population is urban, about 37% of the county's urban population lives in the less-densely populated urban clusters.

Population data for the recommended area in Pickens County is estimated, based on the population for cities contained inside the boundary (city of Clemson) and other population data for Pickens County. The population in the Pickens County portion of the recommended area is estimated to be 17,043. Using the scale of a map, the land area is calculated to be approximately 63 square miles, and the population density for the Pickens county portion of the Anderson Nonattainment Area is calculated to be 270.5 persons per square mile.

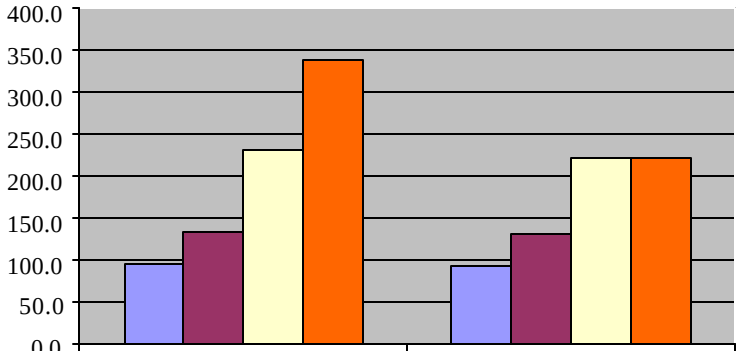
Table B-1 contains population data for Anderson and Pickens Counties and their portions of the Anderson Nonattainment Area.

Table B-1:
Total Population, Land Area, and Urban/Rural Population, 2000

	Anderson County	Recommended Area in Anderson County	Pickens County	Recommended Area in Pickens County
Population[1]	165,740	98,475	110,757	13,928
Land Area (Square Miles)[1]	718	290.2	497	62.5
Persons per Square Mile[1]	230.8	339.3	222.9	222.8
Urban Population[2]	96,680	Unknown at this time	64,579	Unknown at this time
% Urban Population[2]	58.3%	Unknown at this time	58.3%	Unknown at this time
Rural Population[2]	69,060	Unknown at this time	46,178	Unknown at this time
% Rural Population[2]	41.7%	Unknown at this time	41.7%	Unknown at this time
* The data for the recommended area of Anderson County is based on assumptions and is only estimates. The actual data may be greater than or less than the data provided.				

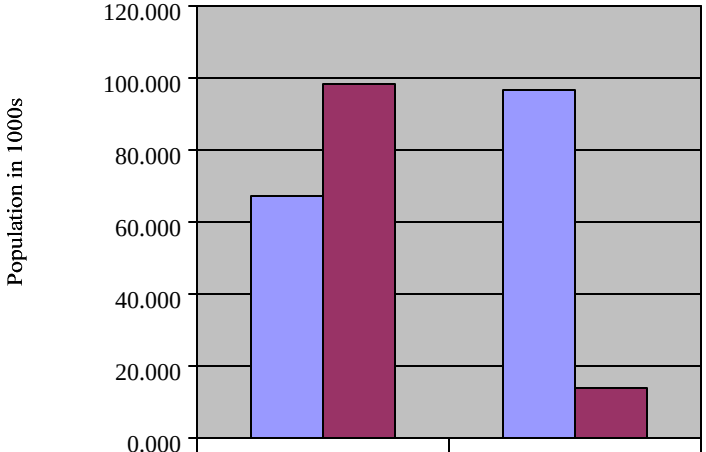
[1] Data provided by the US Census: 2000. Portions of the data for the recommended area were obtained from the SCDOT.
[2] Data provided by the SC Office of Research and Statistics.

Figure B-1: Population Density, 2000
(Persons per Square Mile)



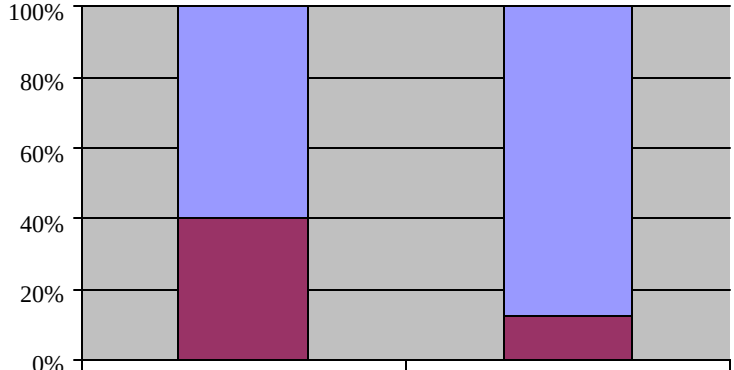
	Anderson County	Pickens County
County Rural Persons per Sq. Mi.	96.2	92.9
County Urban Persons per Sq. Mi.	134.6	130.0
Total County Persons per Sq. Mi.	230.8	222.9
Recommended Area Persons per Sq. Mi.	339.3	222.8

Figure B-2:
Population Distribution
Relative to recommended Area Boundaries, 2000



	Anderson County	Pickens County
Outside Recommended Area	67.265	96.829
Inside Recommended Area	98.475	13.928

Figure B-3: Land Area Distribution According to Recommended Area, 2000



	Anderson County	Pickens County
Non-Recommended Area Land Area in Sq. Mi.	427.8	434.5
Recommended Area Land Area in Sq. Mi.	290.2	62.5

Figures B-1, B-2, and B-3 show the population density distribution, land area distribution, and population distribution, respectively, for Anderson and Pickens Counties relative to the Anderson Nonattainment Area boundaries.

According to the US Census, manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction. Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included. The retail trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

Anderson County has various industry and businesses located throughout it. Manufacturing is the county's largest employment sector as some 22,513 persons are employed at 185 manufacturing establishments throughout the county. Over 92% of the manufacturing employees, or 20,883 employees, and almost 91% of the manufacturing establishments, or 168 establishments, are contained inside of the recommended area. Retail trade is the county's second largest sector of employment as some 9,049 persons work at some 749 retail businesses throughout the county. Being the urban area in the county, the Anderson recommended area is assumed to contain the majority - both employees and establishments - of the manufacturing, retail, and other business in the county.

Pickens County, like Anderson County, has various industry and businesses located in the county, but

manufacturing is the largest employer. There are 9,621 manufacturing employees at some 98 manufacturing establishments in the county. Twenty of those employees and 3 of those establishments are contained inside the Pickens County portion of the recommended area.

Tables B-2, B-3, and B-4 contain the manufacturing and retail trade data for Anderson and Pickens Counties and the Anderson Nonattainment Area.

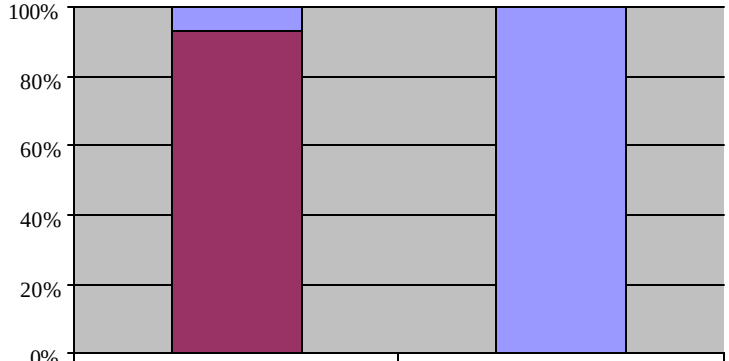
	Table B-2: Manufacturing Employees and Establishments in Anderson County, 2000[3]		
	In recommended area Boundary	In County Boundary	Percent in recommended area Boundary
Number of Employees	20,883	22,513	92.76%
Number of Establishments	168	185	90.81%

	Table B-3: Manufacturing Employees and Establishments in Pickens County, 2000[4]		
	In recommended area Boundary	In County Boundary	Percent in recommended area Boundary
Number of Employees	20	9,621	0.21%
Number of Establishments	3	98	3.06%

	Table B-4: Retail Trade Patterns, 2000[5]	
	Number of Employees	Number of Establishments
Anderson County	9,049	749
Pickens County	4,627	364
Total	13,676	1,113

[3] Data from Bureau of Air Quality file entitled "SC Company File1.xls," based on 2001.
[4] Data from Bureau of Air Quality file entitled "SC Company File1.xls," based on 2001.
[5] Data based on US Census: 2000.

Figure B-4:
Distribution of Manufacturing Employees, 2000



	Anderson County	Pickens County
Outside Recommended Area	1,630	9,601
Inside Recommended Area	20,883	20

Figure B-4 shows the distribution of manufacturing employees relative to the recommended nonattainment boundaries.

C. Monitoring Data Representing Ozone Concentrations in Local Areas and Larger Areas (urban or regional scale)

The Anderson Area Nonattainment Map (Figure 1) shows the ozone monitoring stations in the Anderson Nonattainment Area. Anderson, Pickens and Abbeville Counties have one ozone monitoring station each. The Anderson County air-monitoring station (Powdersville 45-007-0003) is located off Route 81, approximately 300 meters above sea level. The area surrounding the monitoring site is agricultural. According to the South Carolina Department of Transportation (SCDOT), traffic counts for the 1993 show six hundred (600) vehicles per day accessed the road. The site has been in operation since 1991 and measurement of ozone concentrations runs mid-March through mid-November. The monitoring objective for this site is to measure the maximum ozone concentrations.

The Pickens County air-monitoring station (Clemson CMS 45-007-0002) is inside the Anderson Nonattainment Area. The site was established in 1979 and measures ozone concentrations mid-March through mid-November each year. This site is located off of Hopewell Road and according to SCDOT traffic count data for the year 1993 shows one hundred (100) vehicles per day access the road. The surrounding area is agricultural and approximately 216 meters above sea level. The monitoring objective for this site is to measure ozone concentrations for general background

The Oconee County air-monitoring station (Longcreek 45-073-0001) was established in 1983 and measures ozone concentrations continuously (year round). The area surrounding the monitoring station is forest and is approximately 658 meters above sea level. The monitor objective for this site is to measure ozone concentrations for regional transport purposes.

Table C-1 presents the 2000 through 2002 8-hour ozone monitoring data for Anderson, Pickens, and Oconee Counties. Monitoring data for Abbeville County can be found in the Due West Monitoring Site Nonattainment Area document. The design value is the annual fourth-highest daily maximum 8-hour ozone concentration, expressed in parts per million (ppm), averaged over three consecutive years. Since the 2002 ozone design value for the Powdersville and Clemson CMS monitoring sites are 0.088ppm and 0.085ppm respectively, both sites are marginally exceeding the 8-hour ozone standard. The Oconee County monitor indicates attainment of the 8-hour ozone standard.

Table C-1:
Anderson and Surrounding Area Ozone Monitoring Data

County	Site ID	Site Name	4th Maximum 8-Hour			Design Value
			2000	2001	2002	
Anderson	45-007-0003	Powdersville	0.084	0.088	0.093	0.088
Pickens	45-007-0002	Clemson CMS	0.081	0.088	0.088	0.085
Oconee	45-073-0001	Longcreek	0.082	0.078	0.094	0.084

Table C-2 contains the previous three years daily maximum ozone concentrations above 0.084 ppm. A period indicates that no exceedance occurred on the same day at that location.

Table C-2:
Powdersville, Longcreek, and Clemson CMS Site

Date of Exceedance	Anderson Daily Maximum 8-hour Average ppm	Oconee Daily Maximum 8-hour Average ppm	Pickens Daily Maximum 8-hour Average ppm
03/08/2000	.	0.086	.
06/09/2000	0.086	.	.
06/10/2000	.	0.085	0.088
08/16/2000	.	0.085	.
08/17/2000	0.102	.	0.095
08/25/2000	0.087	.	.
2000 Total Hits	**3**	**3**	**2**
05/05/2001	0.092	.	0.085
05/06/2001	0.085	.	0.085
06/18/2001	0.088	0.085	0.088
06/20/2001	0.086	.	.
06/21/2001	.	.	0.088

Table C-2: Powdersville, Longcreek, and Clemson CMS Site			
Date of Exceedance	Anderson Daily Maximum 8-hour Average ppm	Oconee Daily Maximum 8-hour Average ppm	Pickens Daily Maximum 8-hour Average ppm
07/12/2001	0.098	.	0.097
07/17/2001	0.086	.	0.087
08/23/2001	0.089	.	.
09/13/2001	0.088	.	0.09
2001 Total Hits	**8**	**1**	**7**
05/25/2002	0.085	.	.
06/10/2002	0.093	0.094	0.088
06/11/2002	0.09	.	.
06/13/2002	0.093	.	0.086
06/20/2002	0.085	.	0.088
06/21/2002	.	0.086	0.086
06/30/2002	0.085	.	.
07/03/2002	0.095	.	.
07/04/2002	0.086	.	.
08/01/2002	0.087	.	0.086
08/02/2002	0.089	.	0.088
08/08/2002	0.089	.	0.085
08/09/2002	0.086	.	.
08/10/2002	0.089	.	.
08/11/2002	0.089	.	.
08/12/2002	.	.	0.087
08/21/2002	0.099	.	0.09
08/22/2002	0.086	.	.
09/04/2002	0.086	.	.
09/05/2002	0.103	0.097	0.1
09/06/2002	0.091	0.094	0.093

Table C-2: Powdersville, Longcreek, and Clemson CMS Site			
Date of Exceedance	Anderson Daily Maximum 8-hour Average ppm	Oconee Daily Maximum 8-hour Average ppm	Pickens Daily Maximum 8-hour Average ppm
09/10/2002	.	0.094	.
09/11/2002	.	0.091	.
2002 Total Hits	**19**	**6**	**11**

For the past three years, the Longcreek monitoring site had fewer hits than the Powdersville and Clemson CMS sites. In 2002, the Powdersville site had 19 hits and the Clemson CMS site had 11 hits compared with only 6 hits at the Longcreek site.

D. Location of Emission Sources

Table D-1 lists the NO_x point sources that are in operation Anderson and Pickens Counties based on the 1999 NO_x and VOC emissions inventory i-Steps data. Anderson County has 34 NO_x point sources in operation and 32 of these point sources are located within the nonattainment area. Pickens County has 14 NO_x point sources in operation and one of these sources is located within the nonattainment area. Facilities in Red are within the proposed boundary; facilities in Black are outside the proposed boundary.

Table D-1: Anderson County Point Source NO2 Emissions

County	Plant Name	Permit Number	Pollutant	Point Source-NO2 (Tons Per Year)
Anderson	Anderson Medical Center	0200-0061	NO2	10.73
Anderson	Apache Products: Anderson	0200-0048	NO2	2.12
Anderson	Ashmore:#2	9900-0045	NO2	4.83
Anderson	BASF: Anderson	0200-0005	NO2	9.71
Anderson	Blair Mills LP	0200-0034	NO2	6.69
Anderson	Chiquola Industrial Products: Chiquola	0200-0047	NO2	1.00
Anderson	Clemson University: ARF	0200-0096	NO2	0.01
Anderson	Duke Energy: Lee	0200-0004	NO2	3,556.57
Anderson	F & R Asphalt: Plant #2	9900-0107	NO2	4.02
Anderson	Fibertech Corp	0200-0095	NO2	0.13
Anderson	Frigidaire: Anderson	0200-0084	NO2	1.00
Anderson	Goodman Conveyor	0200-0093	NO2	0.55
Anderson	Griffin Thermal Products	0200-0147	NO2	0.18
Anderson	Hexcel Schwebel Inc	0200-0036	NO2	11.33
Anderson	Hydro Aluminum North America	0200-0127	NO2	4.65
Anderson	Isola Laminate Systems Pendleton	0200-0058	NO2	44.74
Anderson	LaFrance: Mt Vernon	0200-0009	NO2	5.67
Anderson	Maxxim Medical	0200-0033	NO2	3.37

Table D-1: Anderson County Point Source NO2 Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-NO2 (Tons Per Year)**
Anderson	Metromont: Belton	0200-0102	NO2	0.10
Anderson	Michelin: Sandy Spring	0200-0018	NO2	50.79
Anderson	Milliken: Cushman	0200-0032	NO2	15.12
Anderson	Milliken: Pendleton	0200-0011	NO2	69.28
Anderson	Mount Vernon Mills: Williamston	0200-0045	NO2	2.91
Anderson	Owens Corning: Anderson	0200-0031	NO2	302.91
Anderson	Pickens Construction Inc	9900-0041	NO2	5.96
Anderson	Plastic Omnium	0200-0117	NO2	3.32
Anderson	Ryobi Technologies Inc	0200-0043	NO2	0.59
Anderson	Sloan construction: Anderson	9900-0113	NO2	9.27
Anderson	Springs Industries: Wamsutta	0200-0014	NO2	9.83
Anderson	Taylor Pallets Inc	0200-0153	NO2	0.40
Anderson	Thomas Concrete: Anderson	9900-0332	NO2	0.01
Anderson	Transmontaigne: Belton-SE	0200-0056	NO2	2.02
Anderson	Vytech	0200-0050	NO2	17.64
Anderson	Zupan & Smith: Powderville	0200-0081	NO2	0.00
	1999 Anderson Co Total			**4,157.45**
	Emissions in Nonattainment Area-Total			**4,153.08**
	Emissions in Nonattainment Area-Percent			**99.9%**
Pickens	Alice Manufacturing: Arial	1880-0018	NO2	3.67
Pickens	Alice Manufacturing: Ellison	1880-0019	NO2	3.83
Pickens	Alice Manufacturing: Elljean	1880-0020	NO2	3.63
Pickens	Alice Manufacturing: Foster	1880-0021	NO2	2.10
Pickens	BASF: Clemson	1880-0007	NO2	73.56
Pickens	Clemson University	1880-0010	NO2	80.32
Pickens	Cornell Dubilier Marketing	1880-0001	NO2	0.00
Pickens	Easley Combined Utilities: Utility Street	1880-0051	NO2	7.01
Pickens	Flexiwall:208 Carolina Drive	1880-0040	NO2	0.02
Pickens	Hollingsworth Saco Lowell	1880-0011	NO2	2.36
Pickens	Liberty Denim LLC	1880-0005	NO2	16.36
Pickens	McKechnie: Highway 93 Plant	1880-0052	NO2	0.65
Pickens	One World Industries :Pickens	1880-0006	NO2	1.14
Pickens	Sloan Construction: Liberty	9900-0098	NO2	5.70
	Pickens Co Total			**200.35**
	Emissions in Nonattainment Area-Total			**80.32**
	Emissions in Nonattainment Area-Percent			**40.1%**

Duke Energy: Lee is subject to the NO_x SIP Call and has a 2004 ozone season NO_x budget of 705 tons.

Table D-2 lists the VOC point sources that are in operation in Anderson and Pickens Counties based on the 1999 NO_x and VOC emissions inventory i-Steps data. Anderson County has 38 VOC point sources in operation and 36 of these point sources are located within the nonattainment area. Pickens County has 14 VOC point sources and one of these sources is located within the nonattainment area.

Table D-2: Anderson County Point Source VOC Emissions

County	Plant Name	Permit Number	Pollutant	Point Source-VOC (Tons Per Year)
Anderson	Anderson Medical Center	0200-0061	VOC	0.29
Anderson	Apache Products: Anderson	0200-0048	VOC	50.75
Anderson	Ashmore: #2	9900-0045	VOC	0.13
Anderson	BASF: Anderson	0200-0005	VOC	76.05
Anderson	Blair Mills LP	0200-0034	VOC	3.37
Anderson	Chiquola Industrial Products: Chiquola	0200-0047	VOC	0.33
Anderson	Clemson University: ARF	0200-0096	VOC	3.04
Anderson	Darby Metalworks	0200-0129	VOC	2.04
Anderson	Duke Energy: Lee	0200-0004	VOC	14.40
Anderson	F & R Asphalt: Plant #2	9900-0107	VOC	0.02
Anderson	Fibertech Corp	0200-0095	VOC	7.58
Anderson	Frigidaire: Anderson	0200-0084	VOC	1.05
Anderson	Goodman Conveyor	0200-0093	VOC	46.95
Anderson	Griffin Thermal Products	0200-0147	VOC	6.96
Anderson	Hexcel Schwebel Inc	0200-0036	VOC	42.89
Anderson	Hydro Aluminum North America	0200-0127	VOC	81.37
Anderson	Isola Laminate Systems Pendleton	0200-0058	VOC	113.32
Anderson	LaFrance: Mt Vernon	0200-0009	VOC	0.11
Anderson	Marathon Ashland: Belton	0200-0052	VOC	33.16
Anderson	Maxxim Medical	0200-0033	VOC	0.19
Anderson	Metromont: Belton	0200-0102	VOC	0.00
Anderson	Michelin: Sandy Spring	0200-0018	VOC	133.06
Anderson	Milliken: Cushman	0200-0032	VOC	2.73
Anderson	Milliken: Pendleton	0200-0011	VOC	58.14
Anderson	Mount Vernon Mills: Williamston	0200-0045	VOC	0.05
Anderson	Owens Corning: Anderson	0200-0031	VOC	175.05
Anderson	Pickens Construction Inc	9900-0041	VOC	0.46
Anderson	Plastic Omnium	0200-0117	VOC	216.89
Anderson	Rockwell Automation/Dodge	0200-0119	VOC	4.56
Anderson	Ryobi Technologies Inc	0200-0043	VOC	25.86
Anderson	Sloan Construction: Anderson	9900-0113	VOC	0.04
Anderson	Springs Industries: Wamsutta	0200-0014	VOC	9.20
Anderson	Taylor Pallets Inc	0200-0153	VOC	0.00
Anderson	Thomas Concrete: Anderson	9900-0332	VOC	0.00
Anderson	Transmontaigne: Belton-PD	0200-0057	VOC	40.93
Anderson	Transmontaigne: Belton-SE	0200-0056	VOC	18.51

Table D-2: Anderson County Point Source VOC Emissions				
County	**Plant Name**	**Permit Number**	**Pollutant**	**Point Source-VOC (Tons Per Year)**
Anderson	Vytech	0200-0050	VOC	136.83
Anderson	Zupan & Smith:Powdersville	0200-0081	VOC	0.00
	1999 Anderson Co Total			**1,306.31**
	Emissions in Nonattainment Area-Total			**1,305.79**
	Emissions in Nonattainment Area-Percent			**100.0%**
Pickens	Alice Manufacturing: Arial	1880-0018	VOC	2.04
Pickens	Alice Manufacturing: Ellison	1880-0019	VOC	2.43
Pickens	Alice Manufacturing: Elljean	1880-0020	VOC	2.81
Pickens	Alice Manufacturing: Foster	1880-0021	VOC	2.02
Pickens	BASF: Clemson	1880-0007	VOC	39.87
Pickens	Clemson University	1880-0010	VOC	0.57
Pickens	Cornell Dubilier Marketing	1880-0001	VOC	0.00
Pickens	Easley Combined Utilities: Utility Street	1880-0051	VOC	0.18
Pickens	Flexiwall:208 Carolina Drive	1880-0040	VOC	18.58
Pickens	Hollingsworth Saco Lowell	1880-0011	VOC	8.57
Pickens	Liberty Denim LLC	1880-0005	VOC	14.12
Pickens	McKechnie: Highway 93 Plant	1880-0052	VOC	42.38
Pickens	One World Industries: Pickens	1880-0006	VOC	22.71
Pickens	Sloan Construction: Liberty	9900-0098	VOC	0.03
	1999 Pickens Co. Total			**156.31**
	Emissions in Nonattainment Area-Total			**0.57**
	Emissions in Nonattainment Area-Percent			**0.4%**

Table D-3 lists the NO_x on-road emissions for Anderson and Table D-4 lists the VOC on-road emissions for this area.

Table D-3: Anderson County On-road NO_x Emissions			
County	**Tier 1**	**Tier 2**	**Highway NO_x (Tons Per Year)**
Anderson	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,316.00
Anderson	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,283.00
Anderson	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	341.00
Anderson	11-Highway Vehicles	04-Diesels	3,178.00
	1999 Anderson Co Total		**7,118.00**

Table D-4: Anderson County On-road VOC Emissions			
County	**Tier 1**	**Tier 2**	**Highway VOC (Tons Per Year)**
Anderson	11-Highway Vehicles	01-Light-Duty Gas Vehicles & Motorcycles	2,521.00
Anderson	11-Highway Vehicles	02-Light-Duty Gas Trucks	1,437.00
Anderson	11-Highway Vehicles	03-Heavy-Duty Gas Vehicles	345.00
Anderson	11-Highway Vehicles	04-Diesels	206.00
	1999 Anderson Co Total		**4,509.00**

E. Traffic and Commuting Patterns

Estimates of the Daily Vehicle Miles Traveled (DVMT) were obtained from the South Carolina Department of Transportation (SCDOT). SCDOT determines current DVMT by multiplying traffic volume (through traffic counts) and lane miles (determined by the Highway Performance Monitoring System) for each particular area. The South Carolina Department of Public Safety, Division of Motor Vehicles, provided motor vehicle registration data. All other data in this section was obtained from the US Census Bureau. All data is based on the year 2000.

Table E-1 shows that the 2000 and 2025 DVMT data for Anderson and Pickens Counties and the Anderson Nonattainment Area.

Table E-1: DVMT for Anderson Nonattainment Area				
County	**2000 DVMT**	**2025 DVMT**	**DVMT Change (2000-2025)**	**Projected % Annual Change**
Anderson	5,207,194	8,687,689	3,480,495	2.67
Pickens	2,224,743	3,613,182	1,388,439	2.49
County Total	7,431,937	12,300,871	4,868,934	2.62
Anderson Nonattainment Total[6]	1,509,963	2,364,286	854,323	2.26
%DVMT Captured Inside Nonattainment Area	20.32	19.46		

Figure 1 shows the Interstates that are located within the Anderson Nonattainment Area. There is one interstate (I-85). I-85 is the major corridor of travel between Spartanburg and Anderson, South Carolina. Additionally, there are three other major routes of travel through Anderson and Pickens Counties. They include US Highways 29, 76/178 and 123. There are also numerous state and secondary roads that connect the larger towns.

[6] Anderson Nonattainment Area totals based on MPO figures and may reflect an underestimation of the total percent captured by the boundary.

Table E-2 presents the breakdown by road classifications of DVMT traveled in the Anderson Nonattainment Area boundary counties from 2000 and projected through 2025.

	Table E-2: DVMT Data for Anderson Nonattainment Area Counties			
	2000	Projected 2007	Projected 2012	Projected 2025
Anderson County				
Rural Interstate (01)	1,600,864	1,968,809	2,231,627	2,914,954
Rural Principal Arterial (02)	292,648	341,872	377,032	468,448
Rural Minor Arterial (03)	706,739	825,614	910,524	1,131,293
Rural Major Collector (04)	1,030,719	1,204,088	1,327,924	1,649,895
Rural Minor Collector (05)	70,663	82,549	91,039	113,113
Rural Local (09)	306,263	357,777	394,573	490,242
Rural Total	4,007,896	4,780,709	5,332,719	6,767,945
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	-	-	-	-
Urban Principal Arterial (13)	607,982	710,246	783,292	973,211
Urban Minor Arterial (14)	320,296	374,170	412,652	512,704
Urban Collector (15)	193,409	225,941	249,178	309,595
Urban Local (18)	77,612	90,666	99,991	124,235
Urban Total	1,199,298	1,401,023	1,545,113	1,919,745
Grand Total DVMT	**5,207,194**	**6,181,733**	**6,877,832**	**8,687,689**
Pickens County				
Rural Interstate (01)	-	-	-	-
Rural Principal Arterial (02)	303,647	358,369	388,825	493,150
Rural Minor Arterial (03)	449,827	530,892	576,011	730,559
Rural Major Collector (04)	465,085	548,900	595,549	755,340
Rural Minor Collector (05)	46,606	55,006	59,680	75,693
Rural Local (09)	214,650	253,333	274,863	348,610
Rural Total	*1,479,815*	*1,746,499*	*1,894,928*	*2,403,353*
Urban Interstate (11)	-	-	-	-
Urban Freeway/Expressway (12)	44,814	52,890	57,385	72,782
Urban Principal Arterial (13)	286,329	337,930	366,649	465,024
Urban Minor Arterial (14)	255,655	301,728	327,370	415,207
Urban Collector (15)	106,750	125,988	136,695	173,371
Urban Local (18)	51,380	60,639	65,793	83,445
Urban Total	*744,928*	*879,174*	*953,892*	*1,209,829*
Grand Total DVMT	**2,224,743**	**2,625,674**	**2,848,820**	**3,613,182**

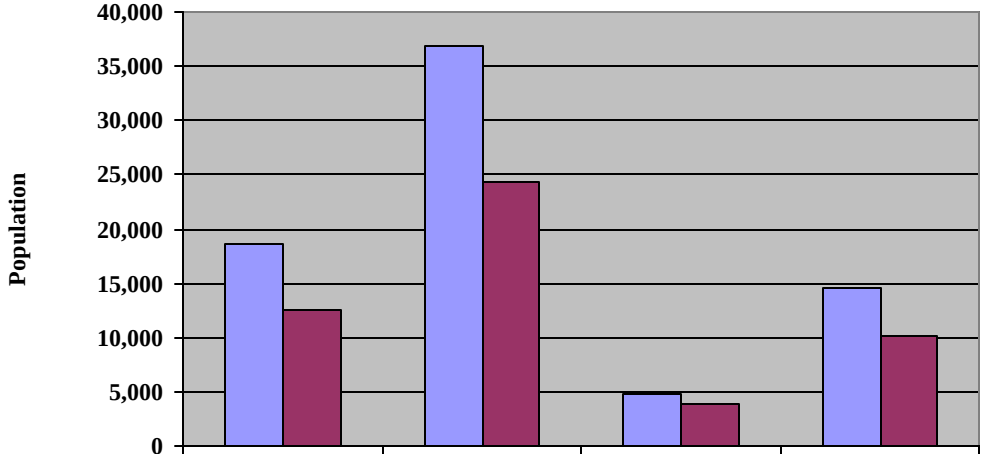
Table E-3[7] presents the 2000 worker flow data from each of the counties. Some counties that are listed on this table are not being considered for boundary recommendations, and are being included on this chart to account for all workers in each county. This table shows that approximately 69% of workers

[7] Data provided from US Census: 2000.

that live in Anderson County work inside the county. Approximately 85% of the workers that work outside the county commute to the neighboring counties of Pickens, Oconee, Spartanburg, or Greenville. This table also shows that approximately 58% of workers that live in Pickens County work inside the county. Approximately 91% of the workers that work outside the county commute to the neighboring counties of Oconee, Anderson, or Greenville.

	Table E-3: Where People Work Who Live in SC			
	County of Residence			
County Worked In	Anderson	Pickens	Out of state	Grand Total
Grand Total	69,224	44,483	1,326	115,033
Abbeville	483	23		506
Aiken	37	32		69
Anderson	51,126	2,046	923	54,095
Beaufort		14		14
Berkeley	39			39
Charleston	55	79		134
Cherokee	16	32		48
Chester	2			2
Dorchester		7		7
Fairfield		17		17
Florence		10		10
Georgetown	27			27
Greenville	10,794	10,698		21,492
Greenwood	256	39		295
Horry	19	4		23
Kershaw	12			12
Lancaster	13			13
Laurens	152	54		206
Lexington	9	17		26
Marlboro	13	5		18
McCormick	43	11		54
Newberry	10			10
Oconee	944	2,100		3,044
Orangeburg	34	13		47
Out of state	928	556		1,484
Pickens	3,712	28,131	403	32,246
Richland	47	102		149
Spartanburg	428	441		869
Sumter	5	5		10
Union	7	14		21
York	13	33		46

Figure E-1: Anderson and Pickens Counties: Time Leaving Home to Go to Work



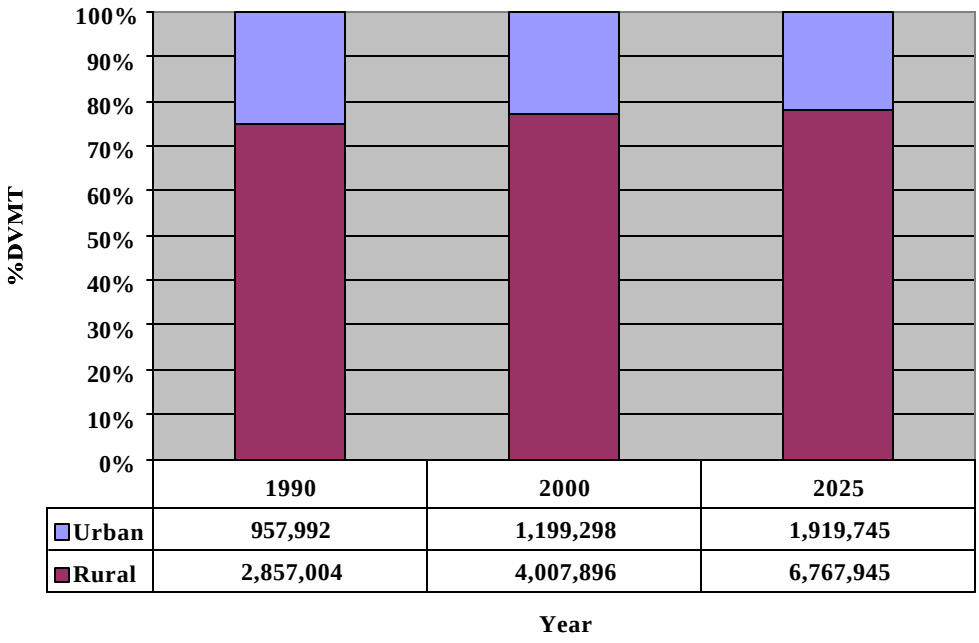
	5:00-7:00am	7:00-9:00am	9:00am-12:00pm	After 12:00pm
Anderson	18,616	36,811	4,870	14,553
Pickens	12,616	24,395	3,923	10,098

Departure Time

Figure E-1[8] presents the departure times for workers in Anderson and Pickens Counties. The figure shows that the largest amount of traffic occurs between 7:00 am to 9:00 am. It should be noted that ozone formation is believed to begin formation in this area during the morning hours and continuing throughout the day until sunset. This is important (since the majority of the traffic is contributed from Anderson County and this traffic occurs during the typical start of ozone formation) because it suggests that the mobile source emissions of NO_x and VOC that help contribute to the ozone formation is mainly from the commuters that reside inside the Anderson Nonattainment Area.

[8] Data provided from US Census: 2000.

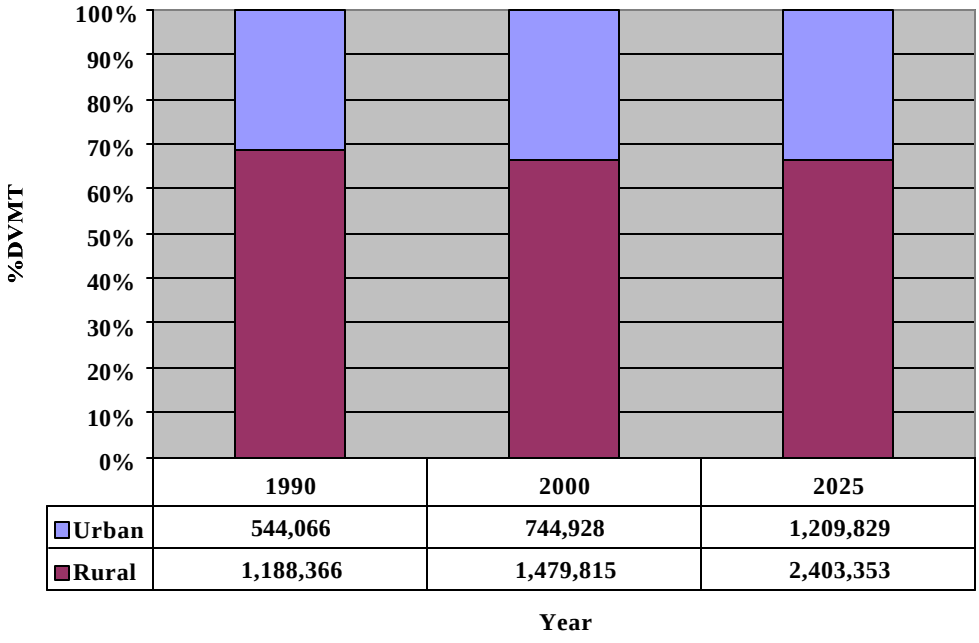
Figure E-2: Urban vs. Rural VMT for Anderson County



	1990	2000	2025
Urban	957,992	1,199,298	1,919,745
Rural	2,857,004	4,007,896	6,767,945

Year

Figure E-3: Urban vs. Rural VMT for Pickens County



	1990	2000	2025
Urban	544,066	744,928	1,209,829
Rural	1,188,366	1,479,815	2,403,353

Year

Figures E-2 and E-3[9] show that there is very little urban DVMT in either Anderson or Pickens Counties. This supports the inclusion of only a small portion of Pickens County inside the Anderson Nonattainment Area.

Figure E-4: 2000 Motor Vehicle Data for Anderson and Pickens Counties

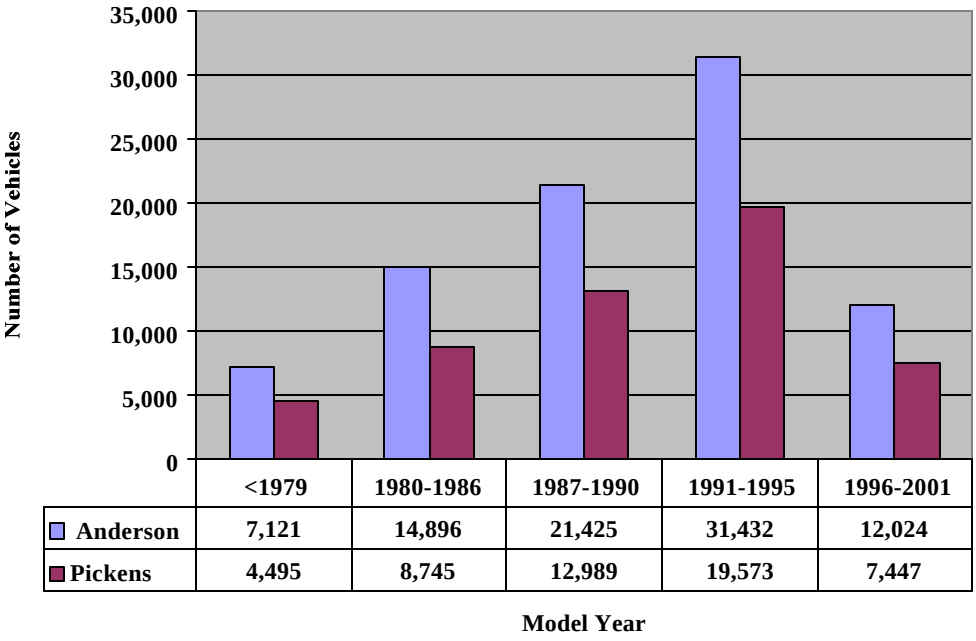


Figure E-4[10] presents the motor vehicle registration data for Anderson and Pickens Counties. Only a small portion of the vehicles are pre-1981 model years. In 1981 new cars were outfitted with three-way catalysts, on-board computers, and oxygen sensors to help increase the efficiency of the catalytic converters. This figure shows that the majority of cars registered are model years 1991-1995. In 1991 the EPA established lower tailpipe standards for hydrocarbons and nitrogen oxides beginning with 1994 model year vehicles.

This data reflects 2000 registration figures, and many vehicle owners will elect to replace vehicles with newer vehicles in the coming years. These vehicle turnovers, combined with future national low sulfur fuel standards, the use of Onboard Diagnostic (OBD) systems and Onboard Refueling Vapor Recovery (ORVR) systems will help to offset any potential impacts from the increased emissions from mobile sources in this area.

F. Expected Growth (Including Extent, Pattern, and Rate of Growth)

Limited data is available in assessing expected growth for Anderson and Pickens Counties. There is

[9] Data provided from US Census: 2000.
[10] Data provided from SC Department of Public Safety, Division of Motor Vehicles.

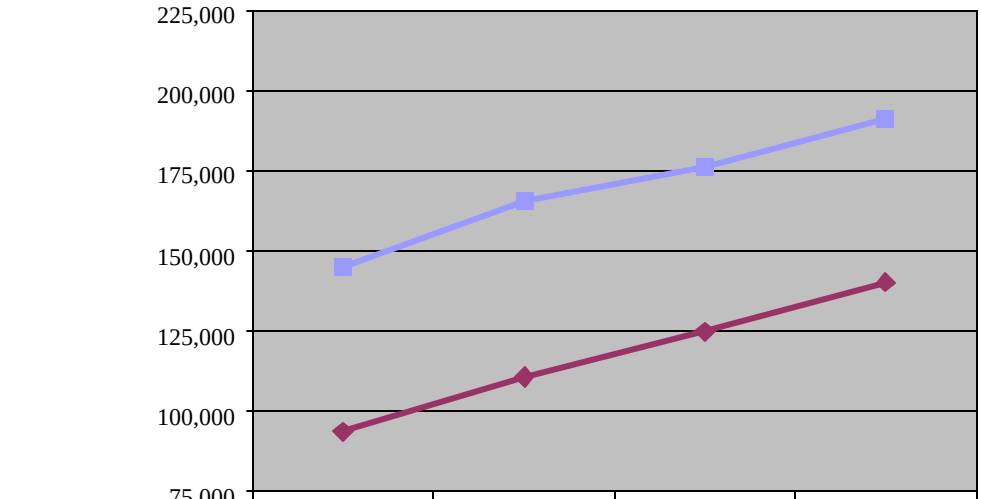
no data readily available for predicting growth inside of the recommended area. Conclusions were drawn based on historical data from 1990, current data from 2000, and population projections for 2020 as contained in Table F-1. Economic growth, relative to population growth, is even harder to predict. No knowledge of major economic expansions is available. While it is certain that population counts will grow, it is only assumed that current economic factors will remain stable or that some economic growth will occur. It is reasonable to expect the majority of that growth to be located inside, or at least near, the Anderson Nonattainment Area.

Table F-1:
Historical and Projected Population and Population Density per County

	Anderson County	Pickens County
Population, 1990[11]	145,177	93,896
Population, 2000 [12]	165,740	110,757
Projected Population, 2020[13]	191,100	140,300
Population. Growth Rate, 1990 – 2000 (Persons per 5 Years)	10,281.5	8,430.5
Projected Population Growth Rate, 2000 – 2020 (Persons per 5 Years)	6,340	7,385.75
Land Area (Sq. Miles)	718	497
Persons per Sq. Mile, 2000	230.8	222.9
Projected Persons per Sq. Mile, 2020	266.2	282.3
Urban Population, 2000	96,680	64,579
% Urban Population, 2000	58.3%	58.3%
Rural Population, 2000	69,060	46,178
% Rural Population, 2000	41.7%	41.7%

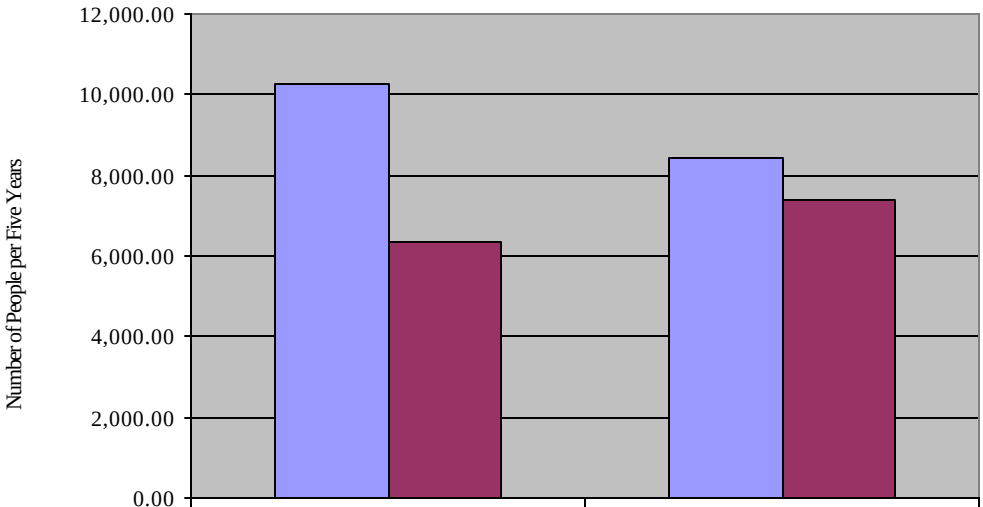
[11] Data provided by the US Census: 2000.
[12] Data provided by the US Census: 2000.
[13] Data provided by the EPA.

Figure F-1:
Population Growth by County, 1990 - 2020



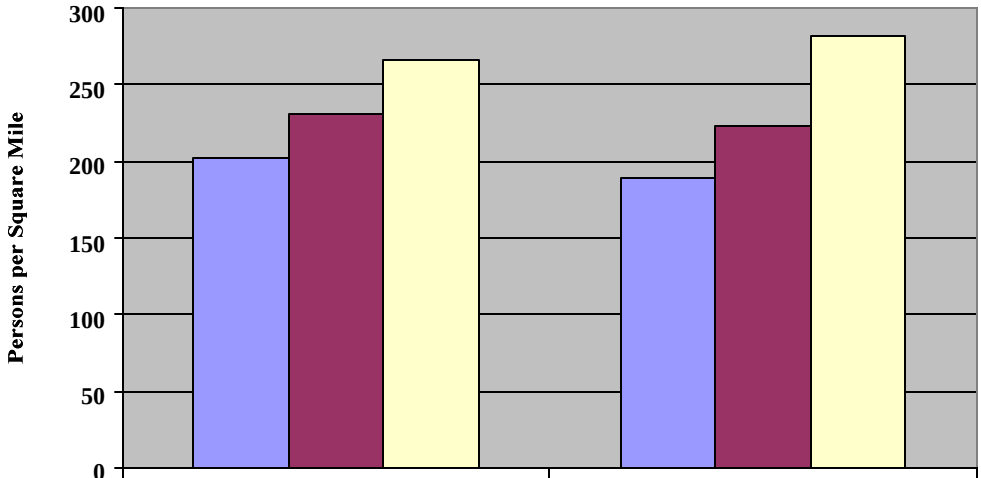
	1990	2000	2010	2020
Anderson County	145,177	165,740	176,400	191,100
Pickens County	93,896	110,757	125,000	140,300

Figure F-2:
Population Growth, 1990 - 2020



	Anderson County	Pickens County
1990 - 2000	10,281.50	8,431
2000 - 2020	6,340	7,385.75

Figure F-3
Historical and Projected Population Density



	Anderson County	Pickens County
1990	202.2	188.9
2000	230.8	222.9
2020	266.2	282.3

Figures F-1, F-2, and F-3 show historical and projected data for total population, rate of growth, and population density, respectively, for Anderson and Pickens Counties. Since the Anderson Nonattainment Area already captures the area's urban population and contains portions of the manufacturing and retail trade, it is reasonable to conclude that the Anderson Nonattainment Area at least approximates, if not contains, the expected population growth, and hence the economic growth, for the area in the coming years.

It should be noted that trends are based on projected data for 2020. The population will grow in each county; however, comparing the population increase per five years over the last ten years (1990 – 2000) to the projected population increase per five years over the next twenty years (2000 – 2020) shows that the rate of growth slows for both counties. Since the Anderson Nonattainment Area includes the urbanized portion of Anderson County and a fair portion of Pickens County, it is assumed that the Anderson Nonattainment Area will encompass the majority of expected population growth.

The largest and second-largest employment sectors in both Anderson and Pickens Counties are manufacturing and retail trade.[14] The third largest sector in Anderson County is the health care and social assistance while the third-largest sector in Pickens County is the accommodations and food services.

G. Meteorology

See Section V - G of Introduction.

[14] Data provided by US Census: 2000.

H. Topography

See Section V - H of Introduction.

I. Jurisdictional Boundaries

The Department's recommended nonattainment area boundary is composed of two partial counties, the developed portions of Anderson County located within the Anderson MPO and the contiguous area encompassing the monitor site at Powdersville and the monitor site at Clemson in Pickens County.

Starts at the intersection of US 123 and the Saluda River.
Follows the Saluda River south to SC 247.
Follows SC 247 southwest to Belton Highway (US 76 / 178).
Follows Belton Hwy (US76/178) eastto Shirley Store Road (S-627).
Follows Shirley Store Road (S-627) southeast for 0.6 miles to Neals Creek.
Follows Neals Creek south for 1.4 miles to Hart Road.
Follows Hart Road southwest for 0.3 miles to Broadway Lake Road.
Follows Broadway Lake Road east for 0.4 miles to Robertson Road (S-488).
Follows Robertson Road (S-488) southwest for 0.3 miles to Scott Road (S-435).
Follows Scott Road (S-435) southwest for 1.6 miles to SC 185.
Follows SC 185 northwest for 1.0 mile to SC 28.
Follows SC 28 south for 0.3 miles to Middleton Road (S-108).
Follows Middleton Road (S-108) southwest for 0.6 miles to Nesbit Creek.
Follows Nesbit Creek west for 1.5 miles to Hall Road.
Follows Hall Road southeast for 0.7 miles to Middleton Road (S-108).
Follows Middleton Road (S-108) west for 0.4 miles to Thompson Road.
Follows Thompson Road west for 0.9 miles to Flat Rock Road (S-49).
Follows Flat Rock Road (S-49) northwest for 1.1 miles to Hayes Road.
Follows Hayes Road west and north for 1.3 miles to SC81.
Follows SC 81 west for 0.5 miles to Chris de Lane (S-434).
Follows Chris de Lane (S-434) west for 1.2 miles to Unnamed Creek.
Follows Unnamed Creek southwest and west for 2.5 miles to Mountain Creek Church Road (S-104)
Follows Mountain Creek Church Road (S-104) southwest for 0.3 miles to S-157.
Follows S-157 west and south for 1.4 miles to S-158.
Follows S-158 northwest for 1.2 miles to US 29.
Follows US 29 to the Savannah River (South Carolina / Georgia state line).
Follows the Savannah River (South Carolina / Georgia state line) northwest to the Anderson County / Oconee County line.
Follows the Anderson County / Oconee County line northeast to the juncture with the Pickens County line.
Follows the Pickens County / Oconee County line northeast and then north to US 123.
Follows US 123 east to the Saluda River (Pickens County / Greenville County line).

J. Level of Control of Emission Sources

Through its participation with the Early Action Compact, Anderson County is exploring local control

strategies such an Ozone Action Coordinator, low sulfur fuels, congestion management and Intelligent Transportation Systems, alternative fuels, hybrid vehicles, higher efficiency engines for school buses, High Occupancy Vehicle (HOV) lanes, modified speed limits, efficient mass transit, and open burning restrictions during ozone season. Pickens County is exploring local control strategies such as an ozone public relations program, ozone advisory committee, participating in voluntary Heavy-Duty Diesel Retrofit Programs, park and ride program, contract specifications, carpooling programs, and a no idling policy for county fleets.

K. Regional Emissions Reductions

See Section V of the Introduction.